AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all prior versions and listings in the application.

Listing of Claims:

1-36. (Canceled)

37. (New) A method comprising:

(a) providing an analysis stage for analyzing DNA fragments where the analysis stage comprises a constant electric field for moving the DNA fragments in a first direction; and

(b) providing an enhancement stage for increasing the separation between peaks of the DNA fragments where the enhancement stage comprises a pulsed electrical field for moving the DNA fragments in a second direction and where the pulsed electrical field is generated by an electrophoretic ratchet.

38. (New) The method of claim 37, the analysis stage comprising a first analysis stage and a second analysis stage.

39. (New) The method of claim 38, further comprising re-analyzing the DNA fragments using the second analysis stage.

40. (New) The method of claim 38, where the enhancement stage is between the first analysis stage and the second analysis stage.

41. (New) The method of claim 37, the step of providing the analysis stage for analyzing DNA fragments further comprising analyzing the DNA fragments more than once for reducing errors.

42. (New) The method of claim 37, further comprising stopping the first analysis stage.

43. (New) The method of claim 37, the first direction comprising a forward direction and the second direction comprising a reverse direction.

44. (New) The method of claim 37, further comprising repeating steps (a) and (b).

45. (New) A method comprising:

(a) providing DNA fragments;

(b) applying a first constant electrical field for analyzing the DNA fragments;

(c) applying a pulsed electrical field for increasing separation between peaks of the DNA fragments, where the pulsed electrical field is generated by an electrophoretic ratchet; and

(d) applying a second constant electrical field for analyzing the DNA fragments.

46. (New) The method of claim 45, where in steps (b) and (d), the DNA fragments are moved in a forward direction.

47. (New) The method of claim 45, where in step (c), the DNA fragments are moved in a reverse direction.

48. (New) The method of claim 45, further comprising repeating steps (b), (c) and (d).

49. (New) A method comprising:

providing a DNA sequencing ladder;

applying a first cycle on the DNA sequencing ladder comprising:

a first analysis stage for analyzing a first DNA fragment of the DNA sequencing ladder, where a constant electrical field of the first analysis stage moves the first DNA fragment in a first direction; and

an enhancement stage for increasing separation between peaks of the DNA sequencing ladder, where the enhancement stage comprises a pulsed electrical field being generated by an electrophoretic ratchet for moving the DNA sequencing ladder in a second direction;

applying a second cycle on the DNA sequencing ladder, the second cycle comprising a second analysis stage for analyzing a second DNA fragment; and

repeating the first and second cycles.

50. (New) The method of claim 49, where a portion of the second DNA fragment is analyzed in the first analysis stage.

51. (New) The method of claim 49, where the second DNA fragment is longer than the first DNA fragment.

52. (New) The method of claim 49, where the first direction comprises a forward direction and the second direction comprises a reverse direction.

53. (New) The method of claim 49, further comprising stopping the first analysis stage prior to the enhancement stage.

54. (New) The method of claim 49, where the step of applying the second cycle further comprises moving the second DNA fragment in the first direction.

55. (New) Computer readable medium comprising machine readable instructions for:

providing a DNA sequencing ladder;

applying a first cycle on the DNA sequencing ladder comprising:

a first analysis stage for analyzing a first DNA fragment of the DNA sequencing ladder, where a constant electrical field of the first analysis stage moves the first DNA fragment in a first direction; and

an enhancement stage for increasing separation between peaks of the DNA sequencing ladder, where the enhancement stage comprises a pulsed electrical field being generated by an electrophoretic ratchet for moving the DNA sequencing ladder in a second direction;

applying a second cycle on the DNA sequencing ladder, the second cycle comprising a second analysis stage for analyzing a second DNA fragment; and

repeating the first and second cycles.